

## RESEARCH BRIEFS

### Evaluating Teacher Modeling as a Strategy to Increase Student Reading Behavior

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**Abstract.** The purpose of this research was to implement and evaluate a classroom strategy to increase student engagement in sustained silent reading (SSR), a form of school-based recreational reading. Teacher modeling was selected as the primary intervention. A within-subjects ABAB withdrawal design was used to evaluate the effectiveness of the intervention. Baseline data indicated moderate and variable percentages of student SSR. Rapid and marked changes in silent reading behavior were observed during intervention phases. Results suggest that teacher modeling of SSR is an effective functional intervention that can be used to increase student engagement. Implications and limitations are discussed with emphasis on establishing procedures to support successful classroom SSR programs.

Reading is the most fundamental and culturally imperative manipulation of the alphabetic system and an essential component in the development and future success of American children (Adams, 1990; Kaminski & Good, 1998). Using the alphabetic system is a fundamental component of literacy, a comprehensive term inclusive of reading and its related processes (Adams, 1990; Kamhi & Catts, 1998). Teachers in American schools support the fundamental mission of education by helping children develop as skilled readers and literate citizens. However, teaching reading extends beyond instructing mastery of the alphabetic principle and word-level comprehension (Adams, 1990; Pressley, 1998; Thompson & Nicholson, 1999), especially in intermediate grades. Skilled reading development involves significantly more than receiving decoding instruction; learning to read pro-

ficiently combines skill mastery with engagement in literate practices such as recreational reading (Adams, 1990; Pressley, 1998; Widdowson, Moore, & Dixon, 1999). To this end, Johnston, Afflerbach, and Weiss (1993) indicate that teachers' primary instructional goals are to foster enjoyment, enthusiasm, and a deep appreciation for reading in their students. In addition, many state curriculum frameworks include recreational silent reading as a language arts component. If frequent engagement in reading is a desirable social and educational outcome, how is it encouraged and taught?

School leaders, including administrators, teachers, and classroom assistants, influence the behavior of children in a number of ways. An effective and direct method for influencing the behavior of children is demonstrating, or modeling, desired behavior. Social Learn-

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ing Theory (SLT; Bandura, 1977) suggests that valued, "high-status" models can positively affect the perceived importance of an activity and can evoke a desirable behavioral response more readily by providing the observer with ongoing visual feedback. Among other roles, teachers are essential facilitators of desirable behavior in a classroom context and are thus in the position to be valued models (Gambrell, 1996; Grubach, 1986).

Teacher modeling is a common element identified across academic reading programs (Gambrell, 1996; Grubaugh, 1986). Sustained silent reading (SSR) is an important component of reading and language arts curricula where teachers encourage student interest and engagement in recreational reading (Gambrell, 1996; Grubaugh, 1986; Pluck, Ghafari, Glynn, & McNaughton, 1984; Wheldall & Entwistle, 1988; Widdowson, Dixon, & Moore, 1996; Widdowson et al., 1999). Moreover, SSR is used in schools as a way to "foster a recreational reading habit" (Widdowson et al., 1999; p. 216). Consistent with SLT, studies examining SSR have evaluated how teacher modeling is used to strengthen the value and desirability of silent reading. Additional components of SSR programs are (a) student selection of interesting materials, (b) brief teacher self-directed introductory prompts, and (c) discussions following the SSR period.

In many classrooms, however, teachers use SSR in ways that fail to consistently model desired behavior (Gambrell, 1996; Wheldall & Entwistle, 1988; Widdowson et al., 1996). Few systematic examinations have emphasized contextual variables related to student engagement in silent reading. Wheldall and Entwistle (1988), and Widdowson et al. (1996) provide empirical rationale and support for teacher modeling of silent reading as an effective intervention to increased student engaged time. These studies used group and single-subject ABAB reversal designs to examine the effects of teacher modeling on SSR behavior. Results indicated that gains in SSR during intervention phases positively correlate with teacher modeling. In addition to teacher modeling, an array of related teacher behaviors and student reading achievement levels were examined and

linked to on-task reading behavior during SSR. Although these studies demonstrate strong functional relations between teacher modeling phases and student reading behavior, their attention to an assortment of variables de-emphasizes the fundamental importance of the functional relationship between teacher modeling and student engagement (Skinner, 1953). This research seeks to address this shortcoming by attending to the importance of such a functional relationship.

Procedures in the current study were developed to establish SSR as a variable under the functional control of the classroom teacher. The current research intends to identify an effective recreational reading program that can be readily implemented through the use of an empirically supported, teacher-directed intervention. The current study also seeks to examine and highlight teacher modeling—ostensibly the essential component of an effective SSR procedure. For the current study to build on the results of previous studies and contribute to the applied research base, it is necessary to (a) further define SSR, and (b) emphasize the functional control of the teacher. We hypothesized that teacher modeling of silent reading will increase the reading behavior of the children in the study. The primary purpose of the current study was to extend the current research base by emphasizing teacher modeling as a functional variable that can positively affect classroom reading behavior and support the successful establishment of SSR.

## Method

### Participants and Setting

Fourteen third-grade children (7 female and 7 male,  $M = 8.4$  years) and a female teacher with more than 15 years of experience volunteered for participation in the current study. All participants were of Caucasian origin. The children and teacher comprised the full membership of a third grade general education classroom in a rural post-industrial Northeast elementary school servicing 240 students (113 female and 127 male) in kindergarten through fifth grade. All observations were conducted in their homeroom class during the SSR pe-



riod, a part of the normal school activity that the teacher in this study had implemented for more than 10 years. During SSR, students were encouraged to read chapter books and could select them from the classroom, school library, or bring them from home. During SSR, students sat at their desks, which were arranged in two rows of desks facing toward the teacher in the front of the room.

### Recording Procedure

The recording schedule used was a 15-second interval procedure, with 10 seconds used to observe the duration of student reading and 5 seconds for recording. Interval procedures were used in previous studies and are used in the current study to assess the sustained nature of reading. The observers used a microcassette player and lightweight in-ear phones to listen to taped cues during the SSR session. The primary author taped his voice, which said, "observe Student 1" cueing the observation interval, and "record Student 1" cueing termination of the 10-second observation and signaling a 5-second recording period. The full recording procedure lasted 14 minutes and allowed four clockwise sequential rotations of the classroom, whereby each student was observed four times. Recording sheets contained 14 rows and four columns, including a map of the classroom seating arrangement, with each student assigned a number (see Appendix A). Upon cue, observations began at Student 1, Row 1, proceeded down to Student 14, and began again with Student 1 following the end of the first column. A checkmark was placed in the box if the student was engaged in SSR; no checks were made if the student was disengaged from SSR.

### Dependent Variable

SSR was defined as on-task reading behavior (Pluck et al., 1988; Widdowson et al., 1996; Widdowson et al., 1999). A student's behavior was recorded "on-task" if their eyes were directed toward the text of an open book for either (a) the whole 10-second interval, or (b) over 7 of 10 seconds (see nonexample a). Nonexamples included (a) looking away for 3

or more seconds (Shapiro, 1996), and (b) engaging in an incompatible behavior, such as approaching the teacher, talking, reselecting a book, or leaving the classroom.

### Interobserver Reliability

Two graduate students with training in behavioral observation and functional assessment conducted direct observations of on-task reading behavior. The primary investigator of this research was present as an observer, and a second reliability observer was blind to the purposes of the study. Both students were completing practica at the school where the observations took place. The observers conferred in an off-site university training session and met again, on-site, for 10 minutes before the observation to address any confusion in the proposed operational definition. The second observer was given an assortment of observation sessions during baseline and intervention phases, and was asked to randomly select sessions to co-observe. The second observer independently gathered data for 22% of observations in Phase 1, 25% in Phase 2, 29% in Phase 3, and 25% in Phase 4. Criteria for agreement exceeded 90%, and was calculated using point-by-point agreement (Kazdin, 1982) immediately following each observation. Point-by-point agreement was selected for its ease of calculation and used to decide whether an observation session needed to be discarded because of problems with reliability. Kazdin (1982) recommends calculating Kappa coefficients, which "provide a measure of agreement over and above chance" (p. 67). Kappa coefficients across sessions ranged from .70 to 1.00 ( $M = .89$ ).

### Procedure

Throughout the study, the teacher encouraged students to choose books rather than magazines and other picture-laden materials. The teacher encouraged students to use the bathroom and to ask any questions before sitting for the 20-minute SSR session. During baseline, the teacher did not prompt the beginning of the SSR session in the same manner as specified in the intervention phase. However,

observation of teacher behavior during baseline was not conducted. After the students chose their books and were seated, the teacher began miscellaneous in-class chores such as correcting papers, preparing lessons, filing, and organizing. The teacher did not leave the classroom and maintained a silent demeanor.

The intervention phase consisted of two sequential parts: a verbal prompt and modeling of SSR behavior. The verbal prompt was designed to convey briefly the teacher's enjoyment of reading and provide directions for students (Pluck et al., 1984; Wheldall & Entwistle, 1988; Widdowson et al., 1996; Widdowson et al., 1999). A typical prompt script prepared by the teacher and primary investigator was, "when I sit down, I open to where I left off and begin quietly reading every word until the timer rings. I can't wait to read what's going to happen today!" After prompting, the teacher modeled silent reading in full view of the class. A within-subjects ABAB treatment withdrawal design was used to evaluate the effects of teacher modeling.

**Treatment integrity.** An intervention checklist required the teacher to partially script the verbal prompt in advance, to ensure that each intervention session was reliably prompted. Following each SSR period, the teacher checked a list to ensure that she (a) conveyed enjoyment, (b) gave procedural guidelines to students, and (c) modeled reading.

## Results

Summary data of the percent of intervals students were reading on-task are presented in Figure 1. These data were calculated by dividing the number of on-task intervals by the total intervals observed for each daily observation session. The first nine baseline data points in Figure 1 reflected moderate percentages of on-task reading behavior, and ranged from 51% to 73% ( $M = 59\%$ ). Following the onset of teacher modeling, rapid and marked changes in reading behavior occurred. In this phase, the highest levels of behavior were observed, with 89% to 100% of intervals recorded on-task and 100% nonoverlapping data points with the control/baseline condition ( $M = 93\%$ ).

In the baseline reversal phase, a rapid change in behavior rate occurred. Visual inspection indicates that this initial sharp decrease preceded higher behavior rates than in the initial baseline phase, ranging from 53% to 82% ( $M = 71\%$ ), again demonstrating 100% nonoverlapping data points with the previous phase. The reinstatement of teacher modeling resulted in an immediate return to high levels of on-task reading behavior, with data ranging from 90% to 95% ( $M = 93\%$ ) and 100% nonoverlapping data.

In addition to visual and descriptive analyses, statistical tests were conducted. A reliable change index (RCI; Jacobson, Follette, & Revenstorf, 1984) between treatment and control conditions ( $p < .0001$ ) yielded an effect magnitude of 2.83. This effect indicates that on average the on-task behavior of students during treatment was nearly 3 standard deviations greater compared to baseline control conditions. The teacher fully completed the treatment integrity checklist following 10 of 12 sessions (83% completion).

## Discussion

The current results demonstrate a strong functional relationship between on-task reading behavior and teacher modeling. Moreover, results clearly indicated that the addition of teacher modeling as an intervention increased the on-task reading behavior of children. Conceptually, on-task reading behavior, as operationally defined in the current study, provides clarity and definition to SSR and recreational reading. Indeed, the current results identify the function and topography of a culturally important and desirable outcome (Adams, 1990; Johnston et al., 1993; Kaminski & Good, 1998). The results also draw attention to the centrality of the teacher as a role model (Bandura, 1977). Thus, the emphasis on functional relations in the current study addressed the primacy of modeling as an effective component identified by past research (Pluck et al., 1984; Wheldall & Entwistle, 1988; Widdowson et al., 1996).

Extending the current research toward further identification of functional, ecological variables related to student success is recom-



mended, and is aligned with future direction of school psychology (Sheridan & Gutkin, 2000). Attention to contextual influences and the closer identification of controlling variables are suggested for future examinations of SSR. In this vein, the functional constraints of the current study, although effective in clarifying the functional topography of classroom reading, do not address the multiple influences on reading behavior as addressed in past research. Two such influences include teacher behavior and student achievement level (Pluck et al., 1984; Wheldall & Entwistle, 1988; Widdowson et al., 1996). Widdowson et al. (1996) examined teacher behaviors such as staring, writing, reading, talking, and proximity to students. Drawing experimental links between achievement and silent reading allows for (a) an examination of related skill level, and (b) desirable future effects (National Reading Panel, 2000).

Although the current results demonstrate a strong functional relationship, three fundamental limitations to the current study necessitate attention in future research. First, the most important limitation to this study is the inclusion of the principal researcher as primary observer. Future examinations must address this limitation, as it influences the confidence with which the results of the study can be at-

tributed to teacher modeling, the primary intervention.

Second, this study does not provide long-term outcome data, and leaves the relationship between SSR and achievement unexplored. Earlier studies sought to examine gains in reading behavior across groups of low-, middle-, and high-achieving students (Wheldall & Entwistle, 1988; Widdowson et al., 1996). The National Reading Panel (2000) identifies a paucity of high quality research examining this link, and cannot conclude that levels of independent silent reading enhance reading achievement. However, the panel notes that this lack of research should not overshadow the effect of silent reading on fluency. Indeed, Adams (1990) suggests that silent reading promotes fluency in the use of cognitive word-recognition strategies such as orthographic and semantic processing. Adams writes, "if we want children to learn the meaning of new words, we should take care to give them the opportunity to read...To this end, regular encouragement of silent reading is strongly recommended" (p. 184). Due to these findings, examining the effects of silent reading on fluency and skill development is highly recommended.

Third, the current study did not examine teacher behavior during baseline conditions.

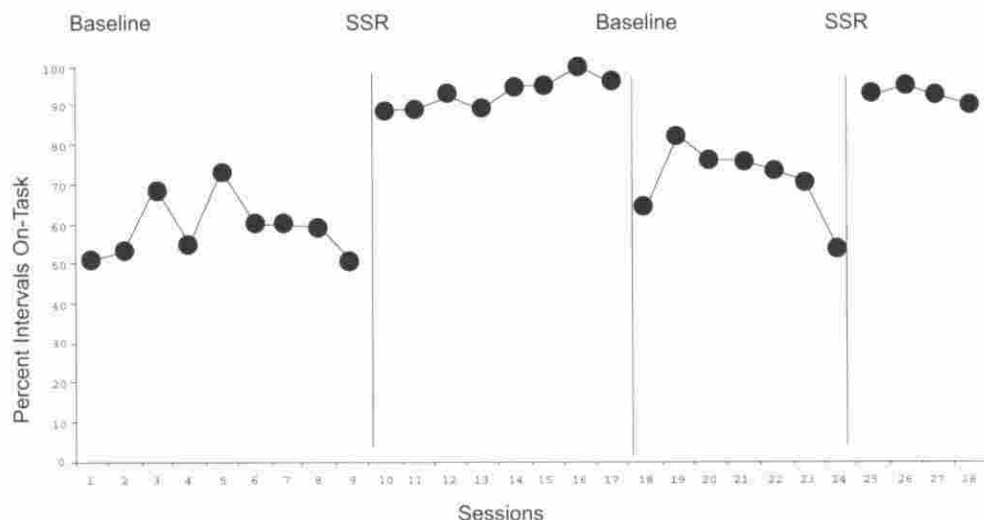


Figure 1. Levels of on-task reading behavior across phases.

Future attention to this component can enhance the attribution of effect to teacher modeling, providing experimental assurance that other teacher behavior could not better account for treatment effect. Specifically, future research should attempt to account for teacher behavior under baseline conditions, ensuring that reading was differentially prompted in treatment conditions. Related to this idea, the current study failed to examine verbal prompting in isolation, leaving the intervention effects open to the notion that the verbal prompt may have been a controlling variable. Future research can examine this and other related behaviors through multiple treatment designs and their variants (Kazdin, 1982).

As the second limitation points out, the current functional constraints preclude examining the effects of SSR outside the classroom. As such, important considerations for generalizing the results arise. Future research should focus on the factors that might lead to reading outside of the classroom, in line with Wiesendanger and Bader (1989), who examined the sustained effects of SSR over time and found that average-achieving readers reported spending more time engaged in summer reading. To validly assess the development of what Widdowson et al. (1999) term a "recreational reading habit," examining external generalization is an imperative for future research. Further examination of generalization across persons and settings is another recommended direction.

Despite the limitations of the study, SSR is a culturally important behavior and a socially desirable educational practice. As an intervention to increase SSR, teacher modeling appears to be both practical and cost-effective. To clarify antecedents and potential effects of SSR as a positive reading habit, further systematic investigation is needed. Furthermore, careful replication and extension can provide definitional and conceptual clarity to constructs such as SSR and recreational reading. Through further research, results similar to those of the current study can support teachers who endeavor to directly manipulate desirable student behavior and facilitate effective educational practices linked to language and literacy.

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## Appendix A

### SSR Recording Sheet

Teacher

1	2	3	4	5	6	7	8
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
9	10	11		12	13	14	
<input type="text"/>	<input type="text"/>	<input type="text"/>		<input type="text"/>	<input type="text"/>	<input type="text"/>	

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\*Place a checkmark (✓) in the box if student is engaging in on-task reading behavior.

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